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(54) COIN PROCESSOR FOR AUTOMATIC VENDING MACHINE

(57)Abstract:

PROBLEM TO BE SOLVED: To solve the problem that labor and time are required since switching of a switching means or wait time during coin collection is required when collecting coins in a coin identifying device 15 of an automatic vending machine provided with a conventional coin processor.

SOLUTION: This device is provided with a control part 51 for controlling a switching means 16, a storage part 54 for storing the control data of the control part 51, a timer part 53 for outputting time information and a communication means 55 for changing the control data. Thus, coins in the coin identifying device 15 can be automatically and efficiently collected on the basis of the control data and time information.
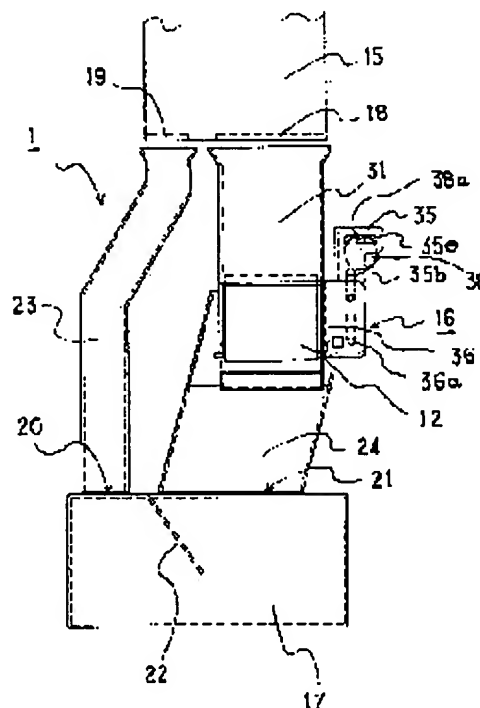
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Notes:

1. Untranslatable words are replaced with asterisks (****).
2. Texts in the figures are not translated and shown as it is.

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[Claim(s)]
[Claim 1] The coin identification unit equipped with a collection-of-money mouth and a change expenditure mouth while identifying the classification of an injection coin, The safe for collection of money, the return mouth for change extraction, and the first shot for collection of money that leads the coin discharged from said collection-of-money mouth to said safe, The return mouth shot which leads the coin paid out of said change expenditure mouth to said return mouth, The coin processing unit of the automatic vending machine characterized by having a change means to open and close complementarily the second shot for collection of money which leads the coin paid out of said change expenditure mouth to said safe, and the passage of said return mouth shot and the passage of said second shot for collection of money, and a control means to control opening-and-closing operation of said change means.
[Claim 2] It is the coin processing unit of the automatic vending machine according to claim 1 characterized by having the timer part which outputs time information, and the memory part which memorizes the control data for collecting a coin, and said control means performing opening-and-closing control of said change means based on said time information and said control data.
[Claim 3] It is the coin processing unit of the automatic vending machine according to claim 2 which is equipped with the means of communication which connects said control means and external equipment, and is characterized by the ability of said control means to change the control data memorized by said memory part based on the control signal transmitted from said external equipment through said means of communication.

[Detailed Description of the Invention]
[0001]

[Field of the Invention] This invention relates to the coin processing unit of the automatic vending machine which returns the coin which was equipped with the coin identification unit which identifies the classification of an injection coin, and collected in the safe the coin discharged from the coin identification unit, or was paid out of the coin identification unit as change to a return mouth.
[0002]
[Description of the Prior Art] As this kind of an automatic vending machine, what is indicated to JP,H6-215248,A was known conventionally. The coin identification unit with which this conventional automatic vending machine was equipped with the collection-of-money mouth and the change expenditure mouth, The safe for the collection of money of a coin, the return mouth which returns change, and the first shot which leads the coin discharged from the collection-of-money mouth to a safe, It has the change means which switches whether the return mouth shot which leads the coin paid out of the change expenditure mouth to a return mouth, the second shot which leads the coin paid out of the change expenditure mouth to a safe, and the coin paid out of the change expenditure mouth are led to any of a return shot or the second shot they are.
[0003] And the coin discharged from the collection-of-money mouth of a coin identification unit is collected by the safe through the first shot. Moreover, when selling the contents goods of an automatic vending machine, the coin paid out of the change expenditure mouth of a coin identification unit is returned to a return mouth through a return mouth shot by switching so that a coin may be led to a return mouth by a change means. On the other hand, when collecting the coin in a coin identification unit, the coin paid out of the change expenditure mouth of a coin identification unit is collected by the safe as it is through the second shot by switching so that a coin may be led to a safe by a change means. Thus, when collecting the coin in a coin identification unit, money can be collected in said safe.
[0004]
[Problem to be solved by the invention] however, [the conventional coin processing unit to apply] A change means is switched so that the coin paid out of the change expenditure mouth of a coin identification unit may be collected by the safe, when collecting the coin in a coin identification unit. It is required to switch so that all the coins in a coin identification unit may be paid out and the coin which pays a change means out of the change expenditure mouth of a coin identification unit may be again returned to a return mouth. For this reason, if the collection-of-money person of a coin does not stand by on that occasion, he requires ******** time and effort, until the collection-of-money work of the coin in a coin identification unit is completed. Moreover, in the situation where the collection-of-money work of a coin was not done, but the coin was suspended so much in the coin identification unit, when it played with the coin identification unit, there were problems, like damage becomes large.

[0005] Then, this invention aims at offering the coin processing unit of the automatic vending machine which solved the above-mentioned conventional problem.

[0006]

[Means for solving problem] [invention concerning Claim 1] in order to solve the above-mentioned technical problem The coin identification unit equipped with a collection-of-money mouth and a change expenditure mouth while identifying the classification of an injection coin, The safe for collection of money, the return mouth for change extraction, and the first shot for collection of money that leads the coin discharged from said collection-of-money mouth to said safe, The return mouth shot which leads the coin paid out of said change expenditure mouth to said return mouth, The second shot for collection of money which leads the coin paid out of said change expenditure mouth to said safe, By having had a change means to open and close the passage of said return mouth shot, and said second shot for collection of money complementarily, and a control means to control opening-and-closing operation of said change means It makes it possible to lead the coin paid out of said change expenditure mouth to either said return mouth or said safe if needed.

[0007] Invention concerning Claim 2 is equipped with the timer part which outputs time information, and the memory part which memorizes the control data for collecting a coin in the coin processing unit of an automatic vending machine according to claim 1, and said control means performs opening-and-closing control of said change means based on said time information and said control data. said control means leads the coin for which said change means was paid out of said change expenditure mouth at the time set beforehand by this to said return mouth by said return mouth shot, or leads it to said safe by said second shot for collection of money -- it makes it possible to switch to that either -- it comes out.

[0008] Invention concerning Claim 3 is equipped with the means of communication which connects said control means and external equipment in the coin processing unit of an automatic vending machine according to claim 2, and [said control means] Based on the control signal transmitted from said external equipment through said means of communication, change of the control data memorized by said memory part is enabled. By this, said control means can be changed based on the control signal to which the shot which leads the time which switches said change means, and the coin paid out of said change expenditure mouth is transmitted from said external equipment.

[0009]

[Mode for carrying out the invention] The form of operation of this invention is explained with reference to a figure.

[0010] The front view of the automatic vending machine 2 with which drawing 5 applies this invention, and drawing 6 are the side important section sectional views of the automatic vending machine 2 which applies this invention.

[0011] In the warehouse of the main part 3 of the automatic vending machine 2, two or more goods storage columns 4 are stored, and goods, such as for example, a paper container drink, are stored in each goods storage column 4. Moreover, the goods shot 25 which shows the sales mouth 11 to the goods sent out from the lower end of the goods storage column 4 is arranged by the lower part of the goods storage column 4. Furthermore, the outdoor unit 14 of said cooling device is arranged by the lower part in the warehouse of the indoor unit 13 of the cooling device which cools the goods in the warehouse of a main part 3 in the lower part of the goods shot 25, and a main part 3, respectively.

[0012] The front of the main part 3 is blockaded by the door 5 free [opening and closing], the goods panel 6 in which the sample of said goods is shown is constituted by the front of this door 5, and the goods selection button 7 is arranged corresponding to each goods panel 6. Moreover, the coin entrance slot 8 and the coin return lever 9, and amount-of-money display-for-indication for injection 10 grade are prepared in the front middle of a door 5. Furthermore, the coin return mouth 12 for the sales mouth 11 which takes out the goods taken out from the goods storage column 4 to return change and a counterfeit coin in the right-hand side of the sales mouth 11 again is formed in the lower central part, respectively. Inside the door 5, the control part (control means) 51 which controls the change means 16 grade of the coin identification unit 15 or the coin processing unit 1 mentioned later to the coin processing unit 1 of this invention and the left of the sales mouth 11 is arranged under the coin identification unit 15 and the coin identification unit 15 under the coin entrance slot 8.

[0013] The state where drawing 1 is led to the front view of the coin processing unit 1 of this invention, and, as for drawing 2 , the change means 16 leads a coin to the coin return mouth 12 with the vertical section side view of the automatic vending machine 2 of coin processing unit 1 portion, and drawing 3 show the state where the change means 16 leads a coin to a safe 17, with the same vertical section side view as drawing 2 .

[0014] The coin identification unit 15 distinguishes the truth of the coin which the merchandise purchase person threw into the coin entrance slot 8, and when it is a counterfeit coin, while returning it to the coin return mouth 12 as it is, when it is a specie, it holds it in the change pipe which an inside does not illustrate about what is used as change. And while paying out of the change expenditure mouth 18 formed in the lower end right-hand side of the coin identification unit 15 as shown in drawing 1 when change arises About the coin thrown in after the coin and change pipe which are not used as change became full, it discharges from the collection-of-money mouth 19 formed in the lower end left-hand side of the coin identification unit 15.

[0015] The safe 17 which collects a coin is held free [attachment and detachment] inside the door 5. The first opening 20 and second opening 21 which were opened wide up are drilled, it installs in a slanting lower part from the upper surface inside between these two openings, and the shield 22 is attached to the upper surface of this safe 17. This shield 22 is in contact with

the rear surface of a safe 17, as shown in <u>drawing 1</u> or <u>drawing 2</u> , and further, when the bottom of a safe 17 and the front consist and estrange a predetermined interval, an abbreviation partition requires a safe 17 for right and left.

[0016] It extends in an abbreviation lower part from the collection-of-money mouth 19, and the first shot 23 for collection of money which results in the first opening 20 of a safe 17 is formed in the coin identification unit 15 collection-of-money mouth 19 bottom. The upper and lower ends counter the collection-of-money mouth 19 and the first opening 20 of a safe 17, respectively, and carry out the opening of the first shot 23 for collection of money to them, and it shows the coin discharged from the collection-of-money mouth 19 to the first opening 20 of a safe 17.

[0017] Moreover, it extends in the lower part before slant from the change expenditure mouth 18, and the return mouth shot 31 which results in the coin return mouth 12 is formed in the coin identification unit 15 change expenditure mouth 18 bottom. The opening of the upper end of the return mouth shot 31 is countered and carried out to the change expenditure mouth 18, and the lower end is open for free passage to the coin return mouth 12. By this, the return mouth shot 31 can show the coin paid out of the change expenditure mouth 18 to the coin return mouth 12. In addition, return **** 39 is blockaded for the coin return mouth 12, enabling free opening and closing.

[0018] The opening 32 is drilled in the bottom 31a of the return mouth shot 31. The opening 32 has the size which a coin can sufficiently pass, and is blockaded free [opening and closing] by the opening and closing plate 33 as a change means 16. This opening and closing plate 33 is located on the bottom 31a of the return mouth shot 31, and the axis 34 of the front tip is supported pivotably by the return mouth shot 31 free [rotation]. This axis 34 extends in the side, and is exposed out of the return mouth shot 31, it is further bent in the shape of a crank, and that end 34a is engaging with the long hole 35a of the link plate 35. The link plate 35 is held possible [up-and-down motion] at the link plate support plate 36, when the long hole 35b engages with two pins 36a prepared in the link plate support plate 36 which adheres to the side of the return mouth shot 31. The long hole 35c is formed above the link plate 35, and the pin 38a of the crank disk 38 rotated with the opening-and-closing drive motor 37 in this long hole 35c is being engaged. That is, when the crank disk 38 rotates and the link plate 35 moves up and down by rotation of the opening-and-closing drive motor 37, an opening and closing plate 33 opens and closes.

[0019] It extends in the method of the diagonal below, and the second shot 24 for collection of money which results in the second opening 21 of a safe 17 is formed in the opening 32 bottom of the return mouth shot 31. It is possible to show the coin which the upper and lower ends of the second shot 24 for collection of money countered an opening 32 and the second opening 21 of the safe 17, respectively, carried out the opening to them, paid out of the change

expenditure mouth 18, and fell to the return shot 31 to the second opening 21 of a safe 17.

[0020] It is the above composition and operation of the coin processing unit 1 of this invention is explained below. In addition, drawing 4 is a control block diagram explaining this invention.

[0021] At the time of contents goods sale of the automatic vending machine 2, like drawing 2 , an opening and closing plate 33 falls back, and blockades the opening 32. If a customer throws a coin into the coin entrance slot 8, the coin identification unit 15 identifies the truth of the thrown-in coin, and when it is a counterfeit coin, it will pay it out of the change expenditure mouth 18 as it is. Although the paid-out counterfeit coin is paid out to the return mouth shot 31, since the opening 32 is blockaded by the opening and closing plate 33 like the above-mentioned, the return mouth shot 31 is passed as it is, and it is led to the coin return mouth 12.

[0022] The thrown-in coin is a specie, when the amount of money for an injection is sufficient for the prices of goods, the coin identification unit 15 outputs a proper signal to the control part 51, and the automatic vending machine 2 will be in a goods sales state by this. And if the goods selection button 7 is pushed, the goods conveyance equipment 52 of the goods storage column 4 which the goods selection signal based on it is sent out to the control part 51, and stores selected goods will drive, the product will be sent out on the goods shot 25, and it will be discharged by the sales mouth 11. On the other hand, while holding the coin identification unit 15 in the change pipe which an inside does not illustrate about the coin used as change, when there is much amount of money invested in the prices of goods, it is paid out of the change expenditure mouth 18 as change. The paid-out change coin is received in the return mouth shot 31, passes the return mouth shot 31 like the above-mentioned, and is led to the coin return mouth 12.

[0023] About the coin thrown in on the other hand after the inside of the coin which is not used as change or a change storage pipe became full, the coin identification unit 15 discharges the coin concerned from the collection-of-money mouth 19 as mentioned above. The discharged coin is received in the first shot 23 for collection of money, passes it, is led to a safe 17, and is accommodated in an inside from the first opening 20. Thus, although the coin collected from the first opening 20 collects on the lower part in a safe 17, since the inside of a safe 17 is divided by the shield 22, it is hard to invade into the range of the method of the shield 22 right, and has become it, and, thereby, the space of the second opening 21 lower part of a safe 17 is secured.

[0024] Next, operation in the case of collecting the coin in the change pipe of the coin identification unit 15 is explained. If the control part 51 recognizes having reached at the predetermined time memorized by the memory part 54 using the information on the timer part 53 which provides the control part 51 with time information, the control part 51 will drive the opening-and-closing drive motor 37 which constitutes the change means 16. And if the crank

disk 38 half-rotates by it, the link plate 35 moves below, and an opening and closing plate 33 will stand up ahead of an opening 32, and will open an opening 32. (Refer to drawing 3) The control part 51 outputs a coin return signal to the coin identification unit 15 further based on the control data for the collection of money of the coin memorized by the memory part 54. The coin identification unit 15 pays the coin in a change pipe out of the change expenditure mouth 18 based on said coin return signal. Thus, although the paid-out coin is once received in the return shot 31, it falls in the second shot 24 for collection of money by an opening 32 in the place which resulted in the opening 32, passes through that, is led to a safe 17, and is accommodated in an inside from the second opening 21 of a safe 17. Thus, the coin in the change pipe of the coin identification unit 15 is collected by the safe 17. [the coin identification unit 15] when the control signal with which the end of expenditure of a coin is expressed to the control part 51 is sent out and the control part 51 drives the opening-and-closing drive motor 37 again after the collection of money from the coin identification unit 15 to apply is completed The link plate 35 is moved up, an opening and closing plate 33 is toppled back, and an opening 32 is closed. The coin paid out of the change expenditure mouth 18 of the coin identification unit 15 comes to be again led to the coin return mouth 12 by this.

[0025] When [by the way,] the control part 51 is equipped with external equipment 56 and the external interface part (means of communication) 55 which performs communication and the memory part 54 is the nonvolatile memory in which data rewriting of EEPROM etc. is possible It is possible to change the control data for the collection of money of the coin memorized by the memory part 54 based on the control data from external equipment 56 (for example, the collection-of-money time of a coin, the denomination which collects money, etc.). The host computer which managers the automatic vending machine 2 which has the coin processing unit 1 of this invention by this, for example is caused external equipment 56, and it becomes possible to change coin collection-of-money data each time according to the round time of the serviceman who manages the sales situation of the automatic vending machine 2, and the automatic vending machine 2.

[0026] In addition, although this invention was applied to the automatic vending machine 2 which sells a paper container drink in the example, this invention is effective in the various automatic vending machines which are not restricted to it but sell other goods. Moreover, about the concrete structure of the change means 16, it is not restricted to an example, and a change means is established directly under the change expenditure mouth 18, for example, the return mouth shot 31 and the second shot 24 for collection of money are arranged in the lower part, and you may make it distribute to shot [which] directly. Moreover, you may use SORENOIDO etc. instead of a motor as a drive means.

[0027]

[Effect of the Invention] A change means to open [according to invention according to claim 1]

and close the passage of a return mouth shot, and the passage of the second shot for collection of money for the coin paid out of the change expenditure mouth of a coin identification unit complementarily as explained above, By making it possible to lead the coin paid out of the change expenditure mouth by having had a control means to control opening-and-closing operation of said change means to either a return mouth or the safe for collection of money if needed the coin in the change pipe of a coin identification unit -- easy -- collection of money -- public funds -- it becomes possible to collect money in a warehouse.

[0028] According to invention according to claim 2, it has the timer part which outputs time information, and the memory part which memorizes the control data for collecting a coin, and said control means performs opening-and-closing control of said change means based on said time information and said control data. [said control means] by this so that the coin paid out of the change expenditure mouth at the time set beforehand may be led to either a coin return mouth or the safe for collection of money the time which was able to define beforehand the coin in the change pipe of a coin identification unit by making it possible to switch a change means -- collection of money -- public funds -- [money is collected in a warehouse, and] while raising the safety on the theft-proof by not neglecting a lot of coins in a coin identification unit Shortening of the coin collection-of-money time by performing a part of coin collection-of-money business in advance is attained.

[0029] According to invention according to claim 3, [said control means] By changing the control data memorized by the memory part based on the control signal transmitted from external equipment through a means of communication By making it possible to change the coin collection-of-money data of the time which switches a change means on real time based on the control signal from external equipment, it is possible to collect the coin to a collection-of-money safe efficiently according to the round time of the sales situation of an automatic vending machine or a serviceman.

[Brief Description of the Drawings]

[Drawing 1] It is the front view of the coin processing unit in which the embodiment of this invention is shown.

[Drawing 2] It is the vertical section side view of the coin processing unit portion of the automatic vending machine in which the embodiment of this invention is shown, and a change means is the figure showing the state of leading a coin to a coin return mouth.

[Drawing 3] It is the vertical section side view of the coin processing unit portion of the automatic vending machine in which the embodiment of this invention is shown, and a change means is the figure showing the state of leading a coin to a safe.

[Drawing 4] It is the control block diagram of the automatic vending machine in which the embodiment of this invention is shown.

[Drawing 5] It is the front view of the automatic vending machine in which the embodiment of this invention is shown.

[Drawing 6] It is the side important section sectional view of the automatic vending machine in which the embodiment of this invention is shown.

[Explanations of letters or numerals]

1 Coin Processing Unit

2 Automatic Vending Machine

12 Coin Return Mouth

15 Coin Identification Unit

16 Change Means

17 Safe

18 Change Expenditure Mouth

19 Collection-of-Money Mouth

23 First Shot for Collection of Money

24 Second Shot for Collection of Money

31 Return Mouth Shot

51 Control Part (Control Means)

53 Timer Part

54 Memory Part

55 External Interface Part (Means of Communication)
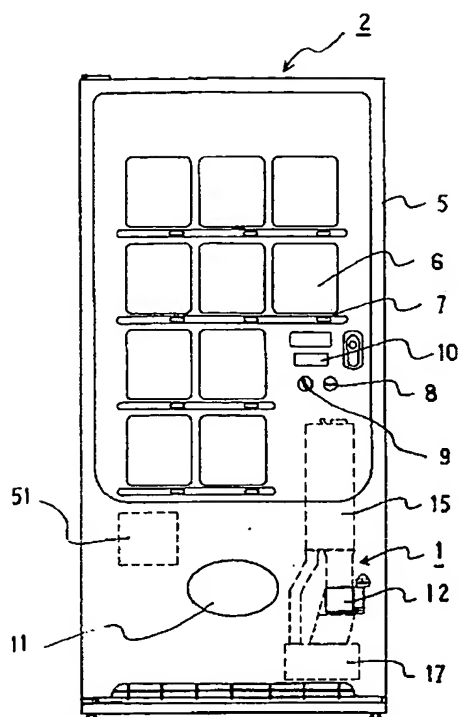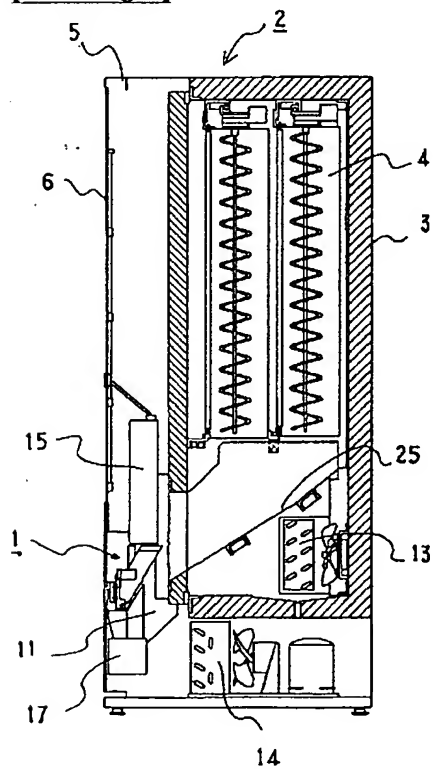
56 External Equipment

[Drawing 1]
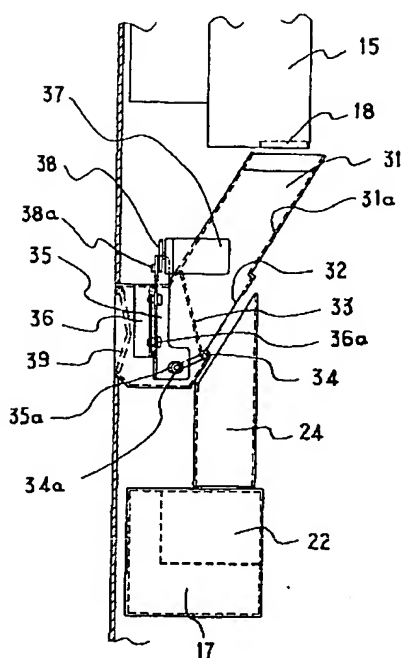
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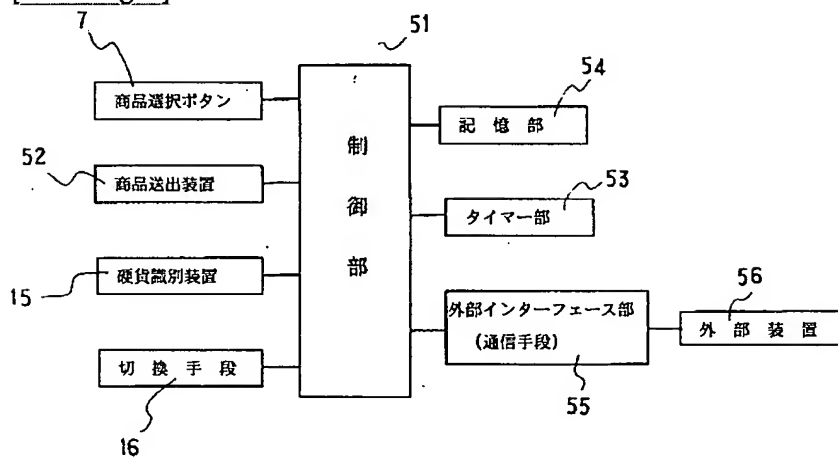
[Drawing 3]

[Drawing 4]

[Drawing 5]

[Drawing 6]

[Translation done.]